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CHAPTER 3

Competition and the Rate of Return

THERE is no more important proposition in economic theory than that, under competition, the rate of return on investment tends toward equality in all industries. Entrepreneurs will seek to leave relatively unprofitable industries and enter relatively profitable industries, and with competition there will be neither public nor private barriers to these movements. This mobility of capital is crucial to the efficiency and growth of the economy: in a world of unending change in types of products that consumers and businesses and governments desire, in methods of producing given products, and in the relative availabilities of various resources—in such a world the immobility of resources would lead to catastrophic inefficiency.[1]

Movements of capital are presumably dominated by the prospective rate of return to the owners of the capital. An entrepreneur will seek to maximize the present value of his equity in the enterprise. If he is dealing with competitive capital markets—markets which lend or borrow funds at interest rates (for given risks) which are constant to the individual entrepreneur—he will hold any type of investment up to the point where the last increment yields a rate of return equal to the market interest rate.

Lenders (whether short or long term) will act on the same principle: they will seek a maximum rate of return (for given risks), and in this respect they differ from entrepreneurs only in having less taste for risk.[2] But many lenders take large risks and many entrepreneurs take fairly small risks, so it is difficult clearly to distinguish the groups. The owner of American Telephone and Telegraph common stock functions more as a lender, in terms of risks and managerial responsibilities, than the owner of a convertible debenture in a mining company does. This fuzziness is in

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[1] A considerable amount of mobility of resources is necessary even in the absence of changes in the size of industries required by changing tastes, resources, and technologies. Members of the labor force change their occupations and often their industries, partly as an expression of changing personal tastes, partly as a result of increasing age and knowledge. There is a similar movement of specific capital goods among industries, although it is presumably smaller because capital goods have shorter lives and are usually more specialized than workers are. Movement of baseball players over forty to other occupations, and sale of used cars by car rental agencies are instances of these movements. Since we have information only on net movements of aggregates of resources, we cannot trace the movements of individual resources.

[2] They also differ in having less desire to engage in management of a firm where this is required by the entrepreneurial role, as in farming. But this difference (like the taste for risk) is only a matter of degree: the lender must have some knowledge of the borrower's abilities and character; the entrepreneur must have some knowledge (no doubt, often more detailed) of the men he hires to manage his enterprise.

fact one reason for combining entrepreneurial income and interest on debt into a single return on capital in our statistical work.

Our primary object in this chapter is to examine the traditional theory of the effect of competition upon the rates of return in different industries in the light of empirical evidence. Then we examine differences between concentrated and unconcentrated industries in rates of return.

1. *Competition and Equality of Rates of Return*

What is the nature of the proposition that under competition there is a tendency for the rates of return on investments in various industries to approach equality? It has been taken by some economists as a *definition* of competition; persistently high profits in an industry would be proof that the industry is not competitive. But this usage is one-sided: no one would argue that the existence of the average rate of return in an industry proved that the industry is competitive.

More commonly, the proposition is viewed as a corollary of the main conditions of competition: a considerable number of firms (no one or few dominant in size) in the industry, and freedom of these firms to leave or of other firms to enter the industry. When competition is so defined, the proposition is evidently not a logically necessary corollary, for a lack of desire for profits or a lack of knowledge of returns in alternative ventures could render any tendency toward equality of rates so negligible as to be wholly unimportant. From this point of view, given the conditions of adequate numbers of firms and freedom of entry, the role of empirical data is to reveal the degree of knowledge, foresight, and enterprise possessed by entrepreneurs.

The role of the word "tendency" raises further issues. Economic analysis tells us that the rates of return in competitive industries will be strictly equal (in a sense to be noted shortly) in *long-run equilibrium*, that is, after a period long enough to allow (enough) entrepreneurs to move to the industry they favor and operate at the rate of output they desire. But this very concept of long-run equilibrium reminds us that, in a world where all events are not perfectly anticipated, there will be a stream of unexpected disturbances that call for a stream of changes in the allocation of resources: unanticipated shifts in consumers' desires; the impact upon international markets of wars and political events; the irregular march of major advances in technology, and others.

One could argue that these unexpected events are so frequent and so drastic in their effects that long before full adjustments have been made to one impact—before long-run equilibrium could be regained—a second

large impact would superimpose reactions on the allocation of capital, and so on. At a given moment, we might observe in an industry:

1. Beginnings of an extensive investment program designed to provide a component to another industry which has just received vast orders from the Department of Defense
2. Continuation of an earlier investment program initiated in response to the discovery five years ago of large new deposits of resources
3. Retirement of capital goods rendered increasingly obsolete (but not yet physically worn out) by the introduction of much superior machines eight years ago

Neither of the earlier impacts will have been fully adjusted to when the recent expansion called for by military demands begins and, long before the new impulse is adjusted to, several new and large displacements of long-run equilibrium may have occurred.

If this were the case—if such unexpected and large disturbances occurred frequently within the period necessary to bring about a reasonably full adjustment to just one disturbance—the equality of rates of return would never be approached even distantly. Almost any amount of dispersion of rates of return in competitive industries would be consistent with the basic theoretical proposition, and it would lose most of its value. More precisely, if the effects of unexpected events on rates of return were very much larger and more persistent than the effects of competition were, the proposition on equality of rates would have almost no value in predicting the direction of investment.

I do not believe this is true: the large unexpected events are not so frequent relative to the speed with which competition equalizes rates as this argument implies (and the smaller events will largely cancel each other). This is an empirical question, however, and one to which we shall soon turn.

Finally, the strict reading of the proposition on equality of rates of return is that the returns entrepreneurs equalize are the total of all advantages and disadvantages—nonmonetary as well as monetary—of using resources in various fields. An example of such possible nonmonetary returns is the pleasures of rural life associated with farming; if they are widely and strongly appreciated, the equilibrium rate of return in agriculture would be lower than in other industries. Another example, more appropriate to our manufacturing universe, is the possible premiums demanded for investing in very risky industries. Risk premiums are indeed regarded in the literature of capital allocation as the chief supple-

ment to average returns, although tax considerations are becoming an important rival. The fact that investment decisions depend upon more than the expected number of dollars of return is therefore still another source of dispersion in the realized rates of return. We should like to know the quantitative magnitude of this source of dispersion and to identify its source.

Let us now draw together these threads of discussion. We expect the rates of return in a set of competitive industries (defined independently of returns) to approach equality, but subject to several qualifications:

1. Some dispersion would exist because of imperfect knowledge of returns on alternative investments.
2. Dispersion of returns would arise because of unexpected developments and events which call for movements of resources requiring considerable time to be completed.
3. Dispersion would arise because of differences among industries in monetary and nonmonetary supplements to the average rate of return.
4. In any empirical study, there is also a fourth source of dispersion: the difference between the income concepts used in compiling the data and the income concepts relevant to the allocation of resources.

Before we turn to these various sources of dispersion, it is well to present the basic data on the rates of return. The distribution of the average rates for the periods 1938–47 and 1947–56 are presented in Table 15.[3] In each case the list of industries is restricted to the "unconcentrated" ones. This word is not a euphemism for "competitive" because it takes account (and then, none too well) of only one requisite of competition: the presence of numerous independent firms (none dominant in size) in the industry.[4] The condition of free entry, which is also a requisite of competition, is not taken into account because relevant data are not at hand, but there is some presumption that industries containing many firms are relatively free of contrived barriers to entry. (The rates of return in other than unconcentrated industries are considered later.)

The concentration of rates of return within narrow limits is quite marked

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[3] The distribution for 1947–54 is also reported because it is used subsequently.

[4] The precise criteria of the class of unconcentrated industries turn on the "concentration ratio," that is, the fraction of the "shipments" of each industry produced by the four largest firms. This ratio is averaged for 1935 and 1947 for the earlier period, and for 1947 and 1954 for the later period. Unconcentrated industries meet one of two conditions: (1) the market is national, and the concentration ratio is less than 50 per cent; (2) the market is regional, and the concentration ratio is less than 20 per cent. The limitations of the measure are discussed in Appendix C.

TABLE 15

DISTRIBUTION OF UNCONCENTRATED MANUFACTURING INDUSTRIES,
BY AVERAGE RATE OF RETURN, THREE PERIODS, 1938–56

Average Rate of Return (per cent)	Number of Industries		
	1938–47	1947–54	1947–56
0–1	—	1	1
1–2	—	—	—
2–3	1	—	1
3–4	—	3	5
4–5	2	6	5
5–6	6	8	7
6–7	5	7	11
7–8	16	10	9
8–9	6	10	10
9–10	3	7	6
10–11	3	5	2
11–12	1	—	—
Total	43	57	57
Mean rate	7.43	7.10	6.73
Standard deviation	1.63	2.18	2.12
Coefficient of variation (per cent)	21.90	30.70	31.50

SOURCE: Tables A-14 to A-59.

in the first period, and somewhat less so in the second period. The more protracted impact of extremely heavy corporate excess-profits taxation in the earlier period is doubtless a major cause of the smaller dispersion. Our task is to relate the traditional theorem on equalization of rates of return to these distributions.

STATISTICAL SOURCES OF DISPERSION IN RATES OF RETURN

The basic data of our study have a variety of defects which are discussed in detail in Chapter 1 and Appendix A. Perhaps the three most important defects for present purposes are those discussed below.

1. *The concept of income appropriate to the economic theory of resource allocation differs substantially from the concept underlying the corporate income tax.*

The most pervasive difference is that, in economic theory, a productive service is valued at its maximum product in any alternative use, whereas corporate income tax rules usually require that costs be actually (historically) incurred. Putting aside the effects of inflation (discussed below), we may say that, in a highly stable period, the historical costs of a firm should approximate the alternative products (or costs) in competitive

industries: the firm will not acquire or retain resources that are more valuable in other uses. But the condition for equality of historical and alternative costs is very severe: the period of stability must be as long as the life of the most durable assets in the industry. The short-lived assets (such as inventories) will differ in historical cost from market values unless the period of stability is also one of rigidity, and the average difference between the two values will approach zero only over many accounting periods. In addition, there are a host of technical provisions of the tax regulations (and of general accounting practices) that have very uneven impact on different industries.[5] It would require an independent investigation of immense scope to ascertain the magnitude of this source of dispersion of rates of return, and we must be content simply to note its existence.

2. *Officers of small corporations who own much of the stock have considerable discretion in withdrawing income either as salaries or as returns on capital, but only the latter form of income enters our rates of return.*

There exists no satisfactory direct method of estimating "excess" salary withdrawals,[6] but we know that the problem is quantitatively important only in industries in which corporations with less than $250,000 of assets are relatively numerous. It is suggestive that the industry with the lowest rate of return for 1938–47, millinery (4.67 per cent), had 91.7 per cent of its corporate assets in the smallest asset classes. We have correlated average rates of return R with the percentage of industry receipts in companies having less than $250,000 of assets P.[7]

1938–47 period:
$$R = 7.566 - 0.0277\ P$$
$$r = -0.267\ (n = 82)$$

1947–54 period:
$$R = 8.237 - 0.0792\ P$$
$$r = -0.435\ (n = 99)$$

The reduction in dispersion is appreciable: the rates of return before and

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[5] See D. T. Smith and J. K. Butters, *Taxable and Business Income*, New York, National Bureau of Economic Research, 1949.

[6] See Appendix A.

[7] *P* has been calculated for one year only in each period: 1943 in the 1938–47 period, and 1950 in 1947–54. The correlations are based upon all industries, rather than only unconcentrated industries, because this relationship should be present in all. However, here, as elsewhere in this chapter with the exception of Tables 15 and 16, those industries with severe large-company classification problems have been eliminated from the computations. These exclusions are described on p. 111.

TABLE 16

DISTRIBUTION OF UNCONCENTRATED INDUSTRIES, BY RATE OF RETURN,
BEFORE AND AFTER ADJUSTMENT FOR SMALL BUSINESS SALARY WITHDRAWALS,
TWO PERIODS, 1938–54

Average Rate of Return (per cent)	Number of Industries			
	1938–47		1947–54	
	Original	Adjusted	Original	Adjusted
0–1			1	
1–2				
2–3	1			2
3–4		1	3	3
4–5	2	2	6	2
5–6	6	3	8	6
6–7	5	10	7	14
7–8	16	14	10	11
8–9	6	7	10	8
9–10	3	3	7	11
10–11	3	2	5	
11–12	1	1		
Total	43	43	57	57
Mean	7.43	7.43	7.10	7.10
Standard deviation	1.63	1.48	2.18	1.80
Coefficient of variation (per cent)	21.90	19.90	30.70	25.40

NOTE: See the accompanying text for explanation of the method of computation.

after adjustment for the varying share of "small" businesses are given in Table 16.

A simple interpretation of the regression equation may be offered. Let P and R be defined as above, and let the subscripts u and l denote the asset classes above and below \$250,000.

Then:

$$R = (1 - P)R_u + PR_l.$$

If W is the withdrawal of salaries by officers in the lower size class, b the fraction of withdrawals that are "excessive" (i.e., really property income), and I_l and A_l the respective property income and assets of this class, the true rate of return of the industry is:

$$R_t = \frac{(bW + I_l)}{A_l} P + (1 - P)R_u$$

$$= \left(b \frac{W}{I_l} + 1 \right) R_l P + (1 - P)R_u$$

$$= R + b \frac{W}{I_l} R_l P$$

$$\text{or} \quad R = R_t - b \frac{W}{I_l} R_l P$$

If we equate the coefficient of P in the last term to .0792 and apply the equation to the men's clothing industry (see Appendix A), b is .47. Of course when this equation is estimated from a group of industries, it is implicitly assumed that the true rate of return is not correlated with P; i.e., it is assumed that the equilibrium rate of return is not lower in industries with a larger proportion of small businesses. We examine this question later.

Omission of noncorporate businesses from the calculations of the rates of return is a closely related source of dispersion. It is quite possibly an important source of dispersion because of the wide variations among industries in the relative importance within them of noncorporate businesses. If the noncorporate sector of an industry is declining, we can infer that its rate of return (including nonmonetary elements) is smaller than the return in the corporate sector and, conversely, that the rate is higher if the noncorporate sector is growing relatively. But an analysis of variance revealed no significant association of the share or trend of the noncorporate sector with the average rate of return of the corporate sector.

The noncorporate profit rate may also influence the average industry rate by fluctuating more or less over time. If we may judge the fluctuations of the noncorporate rate by that of small corporations, it is in fact somewhat more stable over time, so the average industry rate over time would also be more stable if we could measure noncorporate profits.[8]

3. *The asset values on which rates of return are calculated have not been adjusted for price changes.*

An industry that has relatively old assets will have a relatively smaller asset-value base in a period of inflation, and hence a relatively larger rate of return.[9] The period of our study was continuously inflationary in the sense that the book values of assets rose in every year relative to their values in 1947 prices. The difference between rates of return in constant prices and in book values was not large for the two-digit industries, however (see Chapter 2, section 3).

The only possible direct measure of the effect of price deflation of assets and returns on the dispersion of the rates of return is a comparison of the

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[8] The standard deviations of the annual rates of return for 1947–57 are, in per cent:

	Corporations with Assets	
	Under $100,000	Over $100,000
All manufacturing	1.46	1.84
Food and kindred products	1.38	1.36
Apparel and related products	2.06	2.75

[9] Such a firm will also be charging depreciation on assets valued at lower prices, which works in the same direction.

two distributions for the broad two-digit industry groups, shown in the tabulation below.

	1938–47	*1947–54*
	(per cent)	
Average rate of return		
1947 prices	6.81	7.73
Book values	7.07	7.54
Standard deviation of rates		
1947 prices	1.23	1.54
Book values	1.17	1.66

The deflated rates of return thus show a larger dispersion in one period and a smaller dispersion in the other, but in neither period is the difference statistically significant. There is some presumption that the effect of deflation would be greater for the three-digit industries, but we have been unable to estimate it.[10]

RISK PREMIUMS

There exists a strong tradition in economics that a positive risk premium must be paid to investors in risky industries. More precisely, the realized rate of return, after full allowance for defaults and failures, is expected to be higher, the riskier the investment. Only a few economists have taken the opposite position that small prospects of large gains are so highly esteemed that the net risk premium is negative.[11]

The traditional view is supported by the findings on corporate bonds. Whether the risk of an issue is based upon ratings by investment agencies, the market (i.e., by promised yields at market prices), or criteria such as the number of times fixed charges are earned, the corporate bonds issued in the United States between 1900 and 1943 confirm this expectation.[12] Hickman leaves open the question whether this premium reflects risk aversion or institutional limitations upon investments by financial intermediaries.

The investors in corporate equities do not necessarily have the same attitude toward risk, and certainly not the same legal limitations on purchase of equities. Unfortunately our data do not allow us to contribute

[10] One might expect the difference between deflated and undeflated rates of return to be correlated with the percentage of fixed capital, but among two-digit industries no such correlation was found.

[11] See C. O. Hardy, *Risk and Risk Bearing*, University of Chicago Press, 1931, p. 38.

[12] See W. B. Hickman, *Corporate Bond Quality and Investor Experience*, Princeton University Press for National Bureau of Economic Research, 1958, pp. 10 ff.

much to this question. Two alternate measures of risk have failed to yield any reliable relationships.

The first measure is the standard deviation of the annual rates of return realized by all reporting corporations in each industry.[13] The relations between average return R and its standard deviation σ are:

1938–47

$$R = 8.44 - .231\sigma$$
$$r = -.151 \ (n = 38)$$

1947–54

$$R = 6.31 + .302\sigma$$
$$r = .165 \ (n = 54)$$

The results are not heartening: the risk premium coefficient is negative in the first period and statistically nonsignificant in both periods.

The fluctuations over time in an industry's rate of return are risks to investors as a group. The dispersion of rates of return among firms measures the risks to investors in one firm, and is at least equally relevant to entrepreneurial decisions. An estimate of firm dispersions can be constructed from *Statistics of Income*, which reports the share of returns with no net income, and the average rates of return of both income and deficit corporations. On the assumption that the distribution of rates of return is normal, one may estimate the standard deviation for an industry, by asset classes, in each year.[14] An average was calculated for the two prosperous years, 1948 and 1953, and the two recession years, 1949 and 1954. The average of these four standard deviations proves to have a nonsignificant (positive) relationship to average rates of return.

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[13] This average includes corporations taking losses, so long as income tax returns are filed.

[14] The method may be illustrated by the data for the \$50,000 to \$100,000 asset class for all manufacturing industries, 1949:

	Per Cent of Returns	Average Rate of Return Before Taxes (per cent)
Income corporations	60.8	11.86
Deficit corporations	39.2	−15.44

From a table of mean deviates (H. M. Leverett, "Table of Mean Deviates for Various Portions of the Unit Normal Distribution," *Psychometrika*, June 1947), one finds that with a normal distribution the top 60.8 per cent of cases has a mean of .629 σ, and the bottom 38.2 per cent a mean of −.984 σ, so

$$11.86 = \ \ .629\ \sigma$$
$$-15.44 = -.984\ \sigma$$
$$\overline{27.30 = \ \ 1.613\ \sigma}$$

or $\sigma = 16.92$ per cent, as a weighted average of the two estimates. The estimate for each asset class is in turn weighted, to strike an industry average, by the share of industry assets.

These two measures of risk are so crude that we are not entitled to conclude that no risk premiums are demanded. All that can be concluded is that we find no evidence of such premiums in our own restricted investigation.[15]

2. *Sources and Correction of Disequilibriums*

If the entrepreneurs in a competitive industry correctly anticipated all relevant future events and if they were able fully to adjust theirs plans, no disequilibriums could arise: the markets would be in full equilibrium at every moment of time. All disequilibriums arise out of imperfect or tardy anticipation of future events, and they persist only until the adjustment of rates of investment and output they call for can be made.

The sources of disequilibrium are infinitely varied—discovery of new mineral deposits or new techniques, closing or opening of foreign markets, new regulations by governmental bodies, increase of competition within an industry, and so forth. All leave their impact upon the rates of return, and we can, in fact, turn our analysis around and define the fluctuations in an industry's profit rate as the measure of the extent and duration of disequilibriums.[16]

The Marshallian theory, which is the parent of modern theories of the role of time in attaining equilibrium, emphasizes certain barriers to the immediate adaptation of a firm to new conditions. These barriers are usually subsumed under the headings of technological and contractual limitations.[17] Technological limitations arise out of the durability of certain capital forms, which delay the withdrawal of specialized resources, and the time required for construction of new capital, which delays expansion of productive capacity. Contractual obligations set limits upon the short-run discretion of the firm, for they fix prices or rates of purchase or sale. The speed of adaptation to new conditions will therefore

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[15] If any further documentation of the elusiveness of the risk factor is needed, we may cite a related inquiry: is the average rate of return different in industries with relatively much borrowed capital from that in industries with relatively little borrowed capital? The "leverage" of high borrowings would argue that risks of equity holders were larger in the former type of industry. Again no statistically significant relationship was found. Of course the industries with more stable rates of return can safely borrow relatively more, which makes the interpretation of this finding difficult.

[16] Fluctuations in an industry's profit rate can be measured either in absolute terms or relative to the average rate in all industries. The former measure presumably records the total forces of disequilibrium, whereas the measure based upon annual deviations of the industry's rate from that of all industries will eliminate general business fluctuations to the extent that they affect all industries similarly.

[17] The word technological is not ideal, for the importance of technological factors depends upon the price a company is willing to pay: the construction period of a plant can be halved if it is willing to pay the extra costs of the speed.

be governed by the relative use of specialized and durable assets and the time required to produce them, and by the extent and nature of contractual obligations.

Most contractual obligations run for a year or less, and it is improbable that they are an important barrier to adaptations to market changes in so short a time. The growing practice of leasing plants (often financed by pension funds) is giving a larger role to long-run commitments, but this development is too recent to leave a large imprint upon rates of return in the period we study.

Consider, then, specialized and durable resources. Obviously, if resources are not specialized, they can be shifted among industries, and usually on a large scale within a year or two. If they are not durable, an industry can contract its productive capacity rapidly by failing to replace worn-out assets if demand falls. If resources are quickly producible, the industry can expand its capacity rapidly when demand rises or costs fall. We cannot identify specialized resources in our industries, but we can measure the variations among industries in the use of fixed (durable) capital. We would expect rates of return in relatively unprofitable industries to rise (toward the general level) more rapidly, the less the share of fixed assets in total capital.

This hypothesis has been tested by the following procedure. The trough (or peak) in the profit rate of an industry (relative to the average of all industries) in a given period is first identified. Then the magnitude of the differences in the profit rate in that and succeeding years is calculated, and the amount by which the profit rate approaches the average is correlated with the percentage of fixed to all assets.[18]

The results have not been in keeping with expectations. The amount by which an industry's rate of return moves toward the average of all industries proves to be positively correlated with the ratio of fixed to total capital, whereas Marshall's theory predicts a negative correlation. The correlation coefficients are not statistically significant, however. The introduction of an additional variable, change in sales, does not improve the situation.[19]

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[18] This percentage is calculated for a year in the middle of the period, since it normally does not change much from year to year.

[19] For the period, 1947–54, the results may be summarized: let x_1 be the increase in the rate of return a year after the trough (or decrease after the peak); x_2 the ratio of fixed to total capital in 1950; and x_3 the percentage increase in sales receipts. Then

From troughs $(n = 27)$

$$r_{12} = .330 \qquad r_{12.3} = .329$$
$$r_{13} = .033 \qquad r_{13.2} = .013$$

Imperfect as our measures are, they suggest at least tentatively that Marshall's emphasis upon fixed capital as the prime determinant of the rate of return to equilibrium may be misplaced. The effect of specialized and durable resources is surely in the direction his theory describes, but it may be that the adjustments are completed largely within a year, or the effects of fixed plants are important only for very large displacements from equilibrium, or some other factor we have not isolated conceals the effects.

We have observed that the sources of disequilibrium are enormously diverse, but many of them operate upon the selling price of the industries on which they impinge. A shift in demand, a change in taxes, a change in foreign markets or international competition, higher prices of complementary or substitute products—all such forces will leave their mark on the price history of the industry in question.

Steady changes in prices should not occasion or mirror disequilibrium, however, for they can be fully anticipated. If prices rise 5 per cent a year, for whatever reason, the entrepreneurs will adjust their investment plans so the price rise will be no occasion for unusual profits. For the fifty-eight industries for which price indexes could be constructed, we have therefore taken as our measure of unanticipated price movements the standard deviation of the prices after elimination of a linear trend.[20] The unanticipated price fluctuations, so measured, are in fact correlated ($r = .336$) with the standard deviations of the industry profit rates over the period 1947–54. It is interesting to note that the magnitude of price fluctuations, when not corrected for trend, is wholly uncorrelated with fluctuations of profit rates ($r = -.001$).

3. *Returns in Concentrated and Unconcentrated Industries*

Economic theorists have long emphasized the differences in rates of return—and other aspects of business enterprise such as price behavior—between competitive and monopolistic industries. Some of these hypotheses will now be examined. But first, how are we to classify industries as competitive or monopolistic?

From peaks ($n = 23$)

$r_{12} = .216$		$r_{12.3} = .182$
$r_{13} = -.680$		$r_{13.2} = -.675$

Scatter diagrams of similar analyses for 1938–47 suggest similar findings, except that there is a weak negative correlation between x_1 and x_2 for decreases from peaks.

When the return to the mean is expressed as a percentage of the initial peak or trough, the relationships are generally even weaker.

[20] That is, if σ is the standard deviation of the price index over a given period, and r is the correlation of the index with time, $\sigma(1 - r^2)^{1/2}$ is the measure of unanticipated price fluctuations.

The definition of unconcentrated industries has already been given.[21] Concentrated industries are simply those in which the four leading firms produce 60 per cent or more of the value added, and for which the market is national. Industries falling in neither of these categories are labeled ambiguous. It should be noticed that some of the unclassified (ambiguous) industries, operating in smaller than national markets, may be effectively more concentrated than those we so designate. Readers who are acquainted with either the highly controversial literature on concentration ratios or the even more controversial literature on antitrust policy hardly need be told that a concentrated industry need not be monopolistic. High elasticity of demand for the industry's product, or ease of entry by new firms, or the extent of independent rivalry among firms may make the concentrated industry (in this definition) differ in, at most, trifling respects from a fully competitive industry. This difficulty of classification must be faced frankly, but it is not possible to attempt here a more refined classification. One can only give plain warning that discrepancies between the hypotheses of the traditional theory and the findings below may be due in some part to the deficiencies of industry classification.

THE LEVEL OF RATES OF RETURN

The average rate of return of monopolistic industries should, by hypothesis, be greater than that of competitive industries. A monopolist can always enter competitive industries, so he will not be content with less than a competitive rate of return on investment in the long run. On the other hand, there will normally be important barriers to entry of new competitors in a monopolistic industry, or it would not remain monopolistic. Is this expectation confirmed in our concentrated and unconcentrated industries?

The answer is somewhat ambiguous, but on the whole it is negative (see Table 17). The concentrated industries have a higher average rate in 1938–40 and after 1948 (but not in the eight intervening years), according to the annual data. The differences between concentrated and unconcentrated industries in the periods 1951–54 and 1955–57 were statistically significant at the 5 and 2 per cent levels, respectively. These findings suggest a weak affirmative answer, but a qualification undermines them. Over the period 1947–54, the average rate in the concentrated industries was 8.00 per cent, that in the unconcentrated industries 7.16 per cent. If one adjusts the returns for excess withdrawals of officers of small corpora-

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[21] Footnote 4, this chapter, and Appendix C.

TABLE 17

AVERAGE RATE OF RETURN AND STANDARD DEVIATION OF RATES OF
RETURN IN CONCENTRATED, UNCONCENTRATED, AND AMBIGUOUS
INDUSTRIES, 1938–57

Period	Concentrated	Industries Unconcentrated	Ambiguous
		NUMBER	
	14	54	31
		AVERAGE RATE OF RETURN (per cent)	
1938–41	6.51	5.25	6.59
1942–44	6.23	7.68	7.19
1945–47	7.30	10.01	8.64
1948–50	9.11	8.02	8.90
1951–54	6.33	5.05	5.90
1955–57	7.05	5.44	6.35
		STANDARD DEVIATION OF RATE OF RETURN (per cent)	
1938–41	2.60	2.83	2.70
1942–44	1.48	1.40	2.01
1945–47	2.80	2.20	2.15
1948–50	2.82	2.52	2.46
1951–54	1.33	2.21	1.79
1955–57	2.10	2.29	1.75

SOURCE: Tables A-14 to A-59, and C-1 and C-2.

tions, which are important in the unconcentrated industries, the differences almost vanish.[22]

This same conclusion is reached by correlation analysis. Of our industries, twenty-five have national markets: in this group the coefficient of correlation of concentration ratios and average rate of return (corrected for withdrawals) was .130 in 1947–54. In fourteen industries with

[22] In the concentrated industries, the corporations with assets under $250,000 had on average 1.6 per cent of all receipts, whereas the corresponding percentage in unconcentrated industries was 12.7. On the basis of the regression equation (p. 59, above), this factor would account for 95 per cent, or almost all, of the observed difference.

Using data for registered companies, J. S. Bain found that, in the period 1936–40, when the concentration ratio (for the eight largest firms) exceeded 70 per cent, the average rate of return of the industry was substantially higher ("Relation of Profit Rate to Industry Concentration," *Quarterly Journal of Economics*, Aug. 1951). For the sixteen of his forty-two industries that can be approximately identified with our industries, the same result holds for 1938–40—the correlation coefficient between profit rates and concentration is .53. For the period 1947–54, however, neither the difference in means of the two classes (concentration ratios above and below 50 per cent for four firms, roughly corresponding to his 70 per cent level for eight firms) nor the correlation coefficient of profit rates and concentration differs significantly from zero.

regional markets the coefficient was —.085, and in nine industries with local markets, —.379. In no case was the correlation coefficient significant at the 10 per cent level.

It is possible, of course, that a higher level of profits will be reflected in the value of the assets of the industries receiving the profits, whereas the traditional theory predicts higher rates for monopolies on assets valued, not on the basis of earnings, but of alternative products of the assets. Before the economic theorist embraces this popular—and untestable— interpretation of these findings, he should consider the analysis in the next section.

THE DISPERSION OF RATES OF RETURN

Some monopolistic industries will have very high rates of return, if they can preserve their position, because of favorable demand and cost conditions, whereas others will earn only as much as competitive industries, because of unfavorable demand and cost conditions. These differences can persist in monopolistic industries, whose high profits will not be quickly eroded by new rivals, whereas the profits of competitive industries will be. Hence the traditional theory implies that the dispersion of average rates of return (over a substantial period) among competitive industries will be smaller than that of monopolistic industries.

At first glance, the data seem equally unkind to this hypothesis (Table 17). The standard deviation of average rates of return of the concentrated industries is higher in periods from 1942 to 1950, but the differences are not large, and the opposite relationship holds in the terminal periods. But here the adjustment for excess salary withdrawals of officers in small corporations plays an opposite role to that in the average rates of return. The share of assets held by small corporations varies widely among unconcentrated industries, but is always small in concentrated industries. If we adjust the average rates for this factor, the following variances are obtained:

1938–47

$$\frac{\text{variance of concentrated industries}}{\text{variance of unconcentrated industries}} = \frac{5.809}{1.513} = 3.84$$

with 10 and 36 degrees of freedom.

1947–54

$$\frac{\text{variance of concentrated industries}}{\text{variance of unconcentrated industries}} = \frac{4.841}{3.120} = 1.55$$

with 13 and 53 degrees of freedom. The former variance ratio is significant at the 1 per cent level, the latter only at the 20 per cent level.[23]

The larger dispersion of rates of return of concentrated industries demands reconciliation with the failure to find a higher rate of return, for both hypotheses rest upon the same theoretical argument. The reconciliation may simply be that the concentrated industries, which are few in number, include enough essentially competitive industries to mask the higher rates of return of the truly monopolistic industries. Alternately, it may be that concentration itself, quite aside from any monopoly power, is associated with characteristics (e.g., large cyclical fluctuations of output) which make for dispersion of profits.

STABILITY OF THE PATTERN OF RATES OF RETURN

The final hypothesis to be considered here is the stability of the industrial pattern of rates of return. The argument is intimately related to that of the previous hypotheses. Competitive industries will have a volatile pattern of rates of return, for the movements into high-profit industries and out of low-profit industries will—together with the flow of new disturbances of equilibrium—lead to a constantly changing hierarchy of rates of return. In the monopolistic industries, on the other hand, the unusually profitable industries will be able to preserve their preferential position for considerable periods of time.

The correlation coefficients between the rates of return at various time intervals are averaged in Table 18. On the whole, the pattern of coefficients agrees remarkably well with the hypothesis. The industrial pattern of rates is extremely stable in the concentrated industries: even after eight years it was still .5 in both periods. The industrial pattern is much more volatile in the unconcentrated industries, although here the record is somewhat different in the two periods. In the war period the correlation coefficients approached zero when the time span reached four years, whereas in the postwar period the correlation coefficient did not fall below .4 until six years had elapsed. It may be that the mobilization and demobilization affected the unconcentrated industries much more unevenly than they affected the concentrated industries, most of which became important producers of munitions.

[23] The ambiguous industries also have larger variances than the unconcentrated industries.

TABLE 18

CORRELATION OF RATES OF RETURN FOR CONCENTRATED, UNCONCENTRATED,
AND AMBIGUOUS INDUSTRIES, TWO DECADES, 1938–57

Industry Structure	1938–47		1947–57	
	Number of Comparisons	Average Correlations	Number of Comparisons	Average Correlations
RATES OF RETURN IN YEAR T AND $(T + 1)$				
Concentrated	9	.76	8	.74
Unconcentrated	9	.69	8	.72
Ambiguous	9	.82	8	.77
RATES IN YEAR T AND $(T + 2)$				
Concentrated	8	.56	7	.72
Unconcentrated	8	.41	7	.61
Ambiguous	8	.58	7	.70
RATES IN YEAR T AND $(T + 3)$				
Concentrated	7	.58	6	.66
Unconcentrated	7	.18	6	.57
Ambiguous	7	.40	6	.64
RATES IN YEAR T AND $(T + 4)$				
Concentrated	6	.56	5	.69
Unconcentrated	6	.10	5	.53
Ambiguous	6	.30	5	.64
RATES IN YEAR T AND $(T + 5)$				
Concentrated	5	.54	4	.71
Unconcentrated	5	.06	4	.47
Ambiguous	5	.20	4	.70
RATES IN YEAR T AND $(T + 6)$				
Concentrated	4	.49	5	.57
Unconcentrated	4	.24	5	.36
Ambiguous	4	.15	5	.57
RATES IN YEAR T AND $(T + 7)$				
Concentrated	3	.60	4	.57
Unconcentrated	3	.04	4	.26
Ambiguous	3	.16	4	.38
RATES IN YEAR T AND $(T + 8)$				
Concentrated	2	.49	3	.53
Unconcentrated	2	.00	3	.27
Ambiguous	2	.04	3	.38
RATES IN YEAR T AND $(T + 9)$				
Concentrated	1	.38	2	.35
Unconcentrated	1	.17	2	.20
Ambiguous	1	−.15	2	.37
RATES IN YEAR T AND $(T + 10)$				
Concentrated			1	.40
Unconcentrated			1	.11
Ambiguous			1	.05

SOURCE: Same as for Table 17.